GOT DATA?

Your first question

- What are your needs?
- Presentation tool
- Analysis capabilities

DO WE NEED GIS?

WHAT IS GIS?

- WE have all these names--- But I want GIS
- Can we use new information?
- What, Why, Where and How

IS IT-----

- LIS, AM/FM, CAD, GPS?
- ArcInfo
- MapInfo
- AutoCad
- Microstation
- Intergraph

Our NEEDS

St. Paul Public Works

- CUSTOMERS
- PRODUCT
- DATA (INFRASTRUCTURE)
- DATA MAINTENANCE

NEEDS ASSESSMENT

- The Needs Assessment is NOT a study to determine IF you need a GIS///
- But . . .
- A study (ANALYSIS) of your operations that will determine HOW the GIS should be DESIGNED in order to fully UTILIZE everyday ROUTINES.

LET'S ANALYZE PW'S

- DAILY OPERATIONS

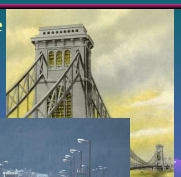
What we got . . . .

Our Infrastructure

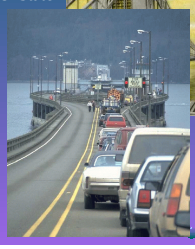
- 55 Sq. Miles
- 272,235 Supervisiors (1990 census)
- Estimated Replacement Value $2,500,000,000.23
- 387 Employees
- $95,813,637 Operating Budget (1999)
- $39,921,000 Capital Budget (1999)

What we got . . . .

Our Infrastructure



- Bridges
  - 114 City Owned Bridges
  - 179 Maintained for County & State
  - 100+ miles of Guardrails
  - 50+ Retaining Walls
  - 23 Skyways
  - 54 Stairways
- Streets
  - 841 Miles
  - 2,323 Alleys



What we got . . . .

Our Infrastructure

- Survey
  - 1500+ Monuments
  - 2500+ Benchmarks
  - 1,000's of Field Books & Site Surveys

- Sewers
  - 450 Miles of Storm Sewer
  - 804 Miles of Sanitary Sewer
  - 29 Pump Stations
  - 60,000+ Manholes & Catch Basins
  - 22 Stormwater ponds
  - 4+ miles of Flood Wall & Levee

What we got . . . .

Our Infrastructure

- Traffic Control
  - 1,875 Parking Meters
  - 490 Mi of pavement marking (stripes)
  - 52,571 Signs
- Signals
  - 363 Signalized Intersections (15,000 bulbs)
  - Lots of Traffic Records

What we got . . . .

Our Infrastructure

- Lighting
  - 30,226 Fixtures
- Sidewalks
  - 1,046 Miles
- Fleet
  - 75 Dump trucks
  - 20 Sweepers, 9 Flusher trucks
  - 25 Sander trucks
  - 28 Specialized heavy trucks
  - 175 Pickups, 85 Cars
  - 5 Loaders, 3 Graders
  - 20 equipment vans

Data Input

Our Infrastructure

Reports

Field notes

Inspections

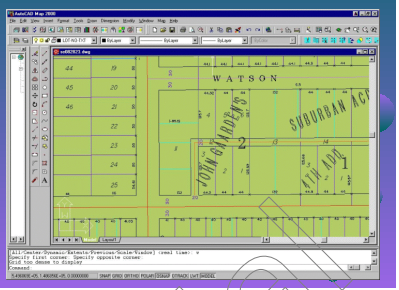
- All of these are in a different format

Tabular Formats

- Maintenance Reports
- Filemaker
- Lotus

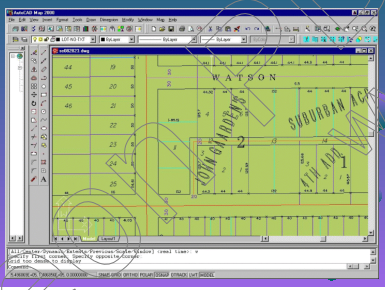
Spatial Formats

- Cad maps
- Digitizing
- Survey Data



Combination Forms

- Plats
- Accident report maps

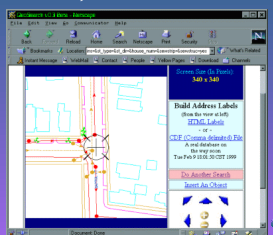


Geo-referencing

- Pull Information
  - Lookup by Address
  - Infrastructure ID
- Push Information
  - Set coordinates for each map sheet
  - Base Map

Updating

- Outside personel
- Inspectors, Truck drivers, Field Crews



Spatial editor

- Updating from Graphical Application (editing)
  - AutoCAD to Oracle
  - Microstation to Oracle
  - Spatially Enabled Web Browser Form
- Next to no extra training
  - Use existing software
  - The system handles translation and coordinate control

Tabular Editor

- Spreadsheets
  - Excel
  - Filemaker
- Attach the Tabular data to Spatial Objects
  - Bridge Inspection to Bridge location
  - Building Permits to Address
  - Signals to Street Intersections

We've established that we have lots of data

Now, how's best way to organize and distribute it

- AND that this data is for CUSTOMERS inside and outside our organization.
- AND how are they going to access this data?
  - Internet
  - Internet
  - Internet

Internet

Data Access

- Access information from anywhere
  - Desktop
  - Field
  - Home
- Up to date information
  - Realtime
- Hardware
  - Computers
  - Laptops
  - Palms

Browsers

- Entry level viewing
  - Office
  - Home
- Gives Non technical people
  - View and use information
- Point and click interface
  - Next to no training required

Portables / Wireless

- Entering attribute information
  - Position information
    - GPS
    - Address
  - Laptops in the Field
    - Inspections
  - Real time Information
    - GPS
    - Timestamps
  - Field to office interaction
    - Work Logs
    - Updates

PDA's

- Palms
- Message Pad
- Accept input from lightpens or stylus
- Data entry from field or vehicle

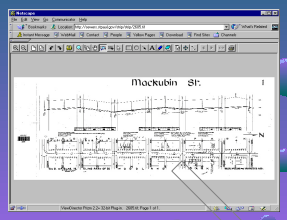
GPS

- Department Inspectors-real time input
- Real time vehicle positioning
- Fleet management

Raster Images

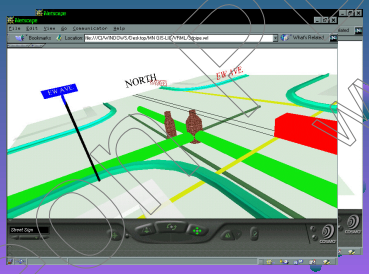
A web site was created for universal access to the data. Two access methodologies are employed:

- Scanned Documents
  - Hundreds of Thousands on hand
  - Not very easy to find
  - Only a few people know the organizational systems
  - Spatially Geocode



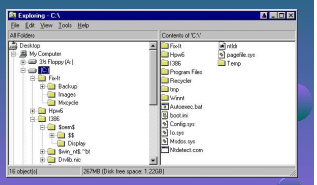
3D Viewer

- VRML
- CAD
- Photos
- Video



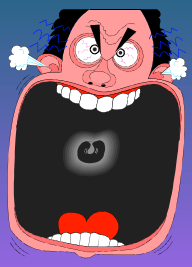
Document Management

- Word Documents
- CAD
- Raster Scans
- Photo's
- Video
- Engineering Documents



Complaint System

- Dispatching
- Resolution
- Fleet Personnel



Viewing Data

- Products
  - < Organization's existing documents
- Maps
  - < Each Departments drawings
- Reports
- Legacy
  - < All the stuff in cabinets and drawers
  - < How many different reports and notes
- Database
  - < Oracle

Spatial Request

- Requests from inside and outside the Department
- Public, Firms, Utilities
- Designers, Planners, Surveyors

Historical Data

- Data Archives
- Old Creeks and Streams
- Electric Trolly Tracks
- Old Platting Neighborhoods

Metadata

- Metadata
- Indexing
- Owner
- Contact Information
- Accuracy

Analysis

- Pushing and pulling of datasets
  - Whole coverages quered against
  - GIS professionals
  - Highend software

Indexing

- Data: Most important component of a GIS
- Maintenance is the most overlooked element of GIS implementation
- Data integrity

Owner

- Owner and Metadata
- Each Dept.,Div.,Unit update their own information
- Standards
- Contact person
  - If data not up to date it will be of little value
  - Map accuracy
  - Attribute accuracy